

Application No. 09/708,038

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## IN THE CLAIMS

Please amend the claims as follows:

1. (currently amended) A detection device for differentiating between a material paper product containing less than a selected amount of lignin and a material containing more than the selected amount of lignin, the materials paper products being of the same color or of a different color, comprising

a light source comprising an ultraviolet component positioned to emit light to strike the material paper product,

a detector for detecting ultraviolet light and generating an electrical signal proportional to an intensity of detected ultraviolet light, the detector being positioned to detect ultraviolet light diffusely reflected off of the material paper product,

an optical filter disposed between the material paper product and the detector to eliminate components of diffusely reflected light outside of the ultraviolet range,

and

an instrument comprising a computer programmed to compare the level of the electrical signal to a predetermined reference level and to output a logic high signal or a logic low signal to indicate that the paper product contains more or less than the selected amount of lignin, for measuring a level of the electrical signal,

wherein the level of the electrical signal ~~can be~~ is compared to a reference level to determine whether the material paper product contains less than or more than the selected amount of lignin.

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2. (canceled)

3. (canceled)

4. (canceled)

5. (currently amended) The device as defined in claim 4 1 in which at least one of the logic high signal or the logic low signal activates a separating mechanism.

6. (original) The device as defined in claim 1 in which the light source also emits light components outside of the ultraviolet range.

7. (currently amended) The device as defined in claim 2 1 in which the selected amount of lignin is determined by a threshold relative reflectance defined by the equation

$$[\% R]_{TS} = [\% R]_{\text{high groundwood}} + ([\% R]_{\text{low white}} - [\% R]_{\text{high groundwood}})/2$$

where  $[\% R]_{TS}$  is the threshold relative reflectance,  $[\% R]_{\text{high groundwood}}$  is an upper limit of groundwood relative reflectance range, and  $[\% R]_{\text{low white}}$  is a lower limit of white relative reflectance range.

8. (previously amended) A method of differentiating between a material containing less than a selected amount of lignin and a material containing more than the selected amount of lignin, the materials being of the same color or of a different color, comprising the steps of:

- a) emitting light comprising an ultraviolet component to strike the material,
- b) detecting an ultraviolet component of the light diffusely reflected off of the material,
- c) generating an electrical signal proportional to an intensity of detected ultraviolet light,
- d) measuring a level of the electrical signal, and

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e) comparing the level of the electrical signal to a reference level to determine whether the material contains less than or more than the selected amount of lignin.

9. (original) The method as defined in claim 8 in which the material is a paper product.

10. (original) The method as defined in claim 9 in which the level of the electrical signal is measured by a computer.

11. (original) The method as defined in claim 10 in which the computer compares the level of the electrical signal to a predetermined reference level and outputs a logic high signal or a logic low signal to indicate that the paper product contains more or less than the selected amount of lignin.

12. (original) The method as defined in claim 11 in which at least one of the logic high signal or the logic low signal activates a separating mechanism.

13. (original) The method as defined in claim 8 wherein the emitted light includes components outside of the ultraviolet range.

14. (original) The method as defined in claim 9 in which the selected amount of lignin is determined by a threshold relative reflectance defined by the equation

$$[\% R]_{TS} = [\% R]_{\text{high groundwood}} + ([\% R]_{\text{low white}} - [\% R]_{\text{high groundwood}})/2$$

where  $[\% R]_{TS}$  is the threshold relative reflectance,  $[\% R]_{\text{high groundwood}}$  is an upper limit of groundwood relative reflectance range, and  $[\% R]_{\text{low white}}$  is a lower limit of white relative reflectance range.

15. (canceled)

16. (canceled)

17. (canceled)

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18. (canceled)

19. (canceled)

20. (canceled)

21. (canceled)

22. (canceled)